Article II, Section 30-28 – Definitions

Anemometer: ***An instrument for measuring wind force and velocity.***

Net Metering: ***A program offered by a utility company that allows customers with eligible renewable energy systems to offset a portion of the electric energy provided by the utility.***

Rated Nameplate Capacity: ***The maximum rated output of electric power production equipment specified by the manufacturer.***

Shadow Flicker: ***The visible flicker effect that occurs when rotating turbine blades cast shadows on the ground and nearby structures, causing the repeating pattern of light and shadow.***

Wind Energy: ***Power generated by converting the mechanical energy of wind into electrical energy through use of a wind generator.***

Wind Energy Conversion System: ***An electric generating device, the main purpose of which is to convert the kinetic energy available in the wind to mechanical energy, consisting of one or more wind turbines, a tower, associated control or conversion electronics and other accessory structures and buildings, including substations, electrical infrastructure, transmission lines and other appurtenant structures and facilities.***

Wind Energy System, Large: ***A wind energy conversion system consisting of one or more wind turbines, towers and associated control or conversion electronics, having a rated nameplate capacity of not more than 999 kilowatts (kW). For purposes of non-residential net metering, Virginia Code §56-594B limits the electrical generating facility to a capacity of not more than 500 kilowatts (kW).***

Wind Energy System, Micro (Building Integrated): ***A building-mounted wind energy conversion system that has a manufacturer's rating of 10 kW or less.***

Wind Energy System, Small: ***A wind energy conversion system consisting of a single wind turbine, a tower, and associated control or conversion electronics, having a rated nameplate capacity of not more than 50 kilowatts (kW) for residential uses and not more than 100 kW for other uses. For the purpose of residential net metering, Virginia Code §56-594B limits the electrical generating facility to a capacity of not more than 10 kilowatts (kW).***

Wind Energy System, Utility (Industrial): ***A wind energy conversion system consisting of more than one wind turbine, towers and associated control or conversion electronics, having a rated nameplate capacity of 1 megawatt (MW) or greater.***

Wind Energy Tower: ***The structure on which the wind turbine is mounted.***

Wind Monitoring or Temporary Meteorological Tower: ***A temporary tower equipped with devices to measure wind speeds and direction; used to determine how much wind power a site can be expected to generate.***

Wind Turbine: ***A wind energy conversion device that converts wind energy into electricity through use of a wind turbine generator; typically having one, two or three blades, nacelle, rotor, generator, controller and associated mechanical and electrical conversion components mounted on top of a tower.***

Windmill: ***A machine designed to convert the energy of the wind into more useful forms of energy, such as grinding, pumping, etc., using rotating blades driven by the force of the wind to turn mechanical equipment to do physical work, without producing energy.***

Article III – District Regulations

SEC. 30-32. - AG-3 AGRICULTURAL/RURAL PRESERVE DISTRICT.

Sec. 30-32-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

5. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-33. - AG-1 AGRICULTURAL/RURAL LOW DENSITY DISTRICT.

Sec. 30-33-2. - Permitted Uses.

(A) Permitted By Right

5. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

6. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-34. - AR AGRICULTURAL/RESIDENTIAL DISTRICT.

Sec. 30-34-2. - Permitted Uses.

(A) Permitted By Right

5. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-36. - AV AGRICULTURAL/VILLAGE CENTER DISTRICT.

Sec. 30-36-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-41. - R-1 LOW DENSITY RESIDENTIAL DISTRICT.

Sec. 30-41-2. - Permitted uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-42. - R-2 MEDIUM DENSITY RESIDENTIAL DISTRICT.

Sec. 30-42-2. - Permitted Uses.

(A) Permitted By Right

3. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-45. - R-3 MEDIUM DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT.

Sec. 30-45-2. - Permitted Uses.

(B) Special Use Permit

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-46. - R-4 HIGH DENSITY MULTI-FAMILY RESIDENTIAL DISTRICT.

Sec. 30-46-2. - Permitted Uses.

(B) Special Use Permit

4. *Miscellaneous Uses*

Wind Energy System, Small*

SEC. 30-47. - PRD PLANNED RESIDENTIAL DEVELOPMENT DISTRICT.

Sec. 30-47-2.

(B) Other use types which are not listed above and which are determined to be appropriate and compatible with the proposed development and surrounding uses may be permitted in the PRD district where they are specifically proposed in the initial preliminary master plan and approved pursuant to Section 30-47-5.

SEC. 30-61. - I-1 LOW INTENSITY INDUSTRIAL DISTRICT.

Sec. 30-61-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

3. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-62. - I-2 HIGH INTENSITY INDUSTRIAL DISTRICT.

Sec. 30-62-2. - Permitted Uses.

(A) Permitted By Right

6. *Miscellaneous Uses*

Wind Energy System, Small*

(B) Special Use Permit

4. *Miscellaneous Uses*

Wind Energy System, Large*

Wind Energy System, Utility*

SEC. 30-63. - PTD PLANNED TECHNOLOGY DEVELOPMENT DISTRICT.

Sec. 30-63-2.

(A) All of the residential, civic, office, commercial, industrial and miscellaneous use types listed in article II of this ordinance are permitted in the PTD district. Residential use types shall be limited to no more than fifteen (15) percent of the total gross square footage. No use shall be permitted except in conformity with the uses specifically included in the final master plan.

SEC. 30-71. - EXPLORE PARK DISTRICT.*

Sec. 30-71-3. - Permitted Uses.

(A) Permitted By Right

4. *Miscellaneous Uses*

Wind Energy System, Small*

Article IV – Use and Design Standards

SECTION 30-87-6. Wind Energy System, Small

(A) Purpose and Intent: The purpose of this section is to regulate the placement, construction, and modification of small wind energy systems while promoting the safe, effective and efficient use of small wind energy systems and not unreasonably interfering with the development of independent renewable energy sources. The requirements set forth in this section shall govern the siting of small wind energy systems used to generate electricity or perform work which may be connected to the utility grid pursuant to Virginia's net metering laws or serve as an independent source of energy.

(B) General Standards:

1. Type of Tower: The tower component of any small wind energy system shall be one that is recommended and certified by the manufacturer. Monopole and lattice towers are the preferred type of support for wind turbines. Guy wired towers are prohibited.

2. Tower Color: Small wind energy system towers shall maintain a galvanized steel finish, unless Federal Aviation Administration (FAA) standards require otherwise. The zoning administrator may allow a property owner, who is attempting to conform the tower to the surrounding environment and architecture, to paint the tower to reduce its visual obtrusiveness. A photo simulation may be required by the zoning administrator.

3. System Height:

(a) System height is defined as the vertical distance measured from average grade at the base of the tower or other supporting structure, whether mounted on the ground or on a rooftop, to the highest point of the turbine rotor or tip of the turbine blade when extended to its highest elevation.

Parcel Size (Acres)	*Maximum System Height*
1.00 to 2.00	*60 feet*
2.01 to 5.00	*80 feet*
Greater than 5.00	*100 feet*

(b) A small wind energy system may exceed the height limitations listed in this section if a special use permit has been obtained by the property owner.

(c) The applicant shall provide evidence that the proposed height of the small wind energy system does not exceed the height recommended by the manufacturer or distributor of the system.

4. Setbacks: The small wind energy system shall be set back a distance at least equal to one hundred ten (110) percent of the height of the wind energy system from all property lines, and roadways.

5. Ground Clearance/Safety: The minimum distance between the ground and any protruding blades utilized on a small wind energy system shall be 20 feet, as measured at the lowest point of the arc of the blades. The lowest point of the arc of the blade shall also be twenty (20) feet above the height of any structure within one hundred fifty (150) feet of the base. The supporting tower shall also be enclosed with a 6-foot tall fence or the base of the tower shall not be climbable for a distance of 12 feet.

6. Number of Towers: More than one tower may be permitted on an individual piece of property provided that all setback requirements have been met.

7. Noise: The wind energy system shall not exceed 60 decibels (dBA), as measured at the closest property line, except during short-term events such as severe windstorms.

8. Lighting: No lighting shall be incorporated on the tower or wind turbine unless required by the Federal Aviation Administration (FAA) or other appropriate authority.

9. Advertising: Signs, writing, pictures, flags, streamers, or other decorative items that may be construed as advertising are prohibited on wind energy systems, except as follows:

(a) Manufacturer's or installer's identification on the wind turbine, and

(b) Appropriate warning signs and placards.

10. Speed Controls. A small wind energy system shall be equipped with manual (electronic or mechanical) and automatic overspeed controls to limit the blade rotation speed to within the design limits of the small wind energy system.

11. Electric Utility Notification. The applicant shall provide evidence that the provider of electric utility service to the site has been informed of the applicant's intent to install an interconnected customer-owned electricity generator, unless the applicant intends, and so states on the application, that the system will not be connected to the electricity grid.

12. Use. A small wind energy system shall be considered an accessory use. The applicant shall provide information demonstrating that the small wind energy system will be used primarily to reduce on-site consumption of electricity.

13. Wind Monitoring or Temporary Meteorological Towers: Small wind energy systems shall comply with the following:

(a) A wind monitoring meteorological tower with an anemometer and other wind measuring devices may be installed with the issuance of a zoning permit for the purpose of monitoring wind and other environmental conditions relevant to siting wind energy systems and used to determine how much wind power a site can be expected to generate. The zoning permit shall be valid for a period of one year.

(b) No wind monitoring meteorological tower for small wind energy systems may rise more than the allowable height of the proposed small wind energy system and shall meet the setback requirements in Sec. 30-87-6(B)4 of this ordinance.

14. Removal of Defective or Abandoned Small Wind Energy Systems:

(a) Each year following the issuance of a zoning permit for a small wind energy system, the owner of such small wind energy system shall submit to the Zoning Administrator an affidavit that verifies continued operation of the wind turbine use and compliance with all requirements of this ordinance and other applicable regulations. Failure to submit required documentation shall result in the Zoning Administrator considering the small wind energy system abandoned. The owner of the small wind energy system shall remove the small

wind energy system within ninety (90) days of receipt of notice from the County instructing the owner to remove the abandoned small wind energy system.

(b) Any small wind energy system found to be unsafe by the building official shall be repaired by the owner to meet federal, state and local safety standards or removed within ninety (90) days.

15. Compliance with Other Regulations: Small wind energy systems shall comply with all applicable local, state and federal regulations.

SECTION 30-87-7. Wind Energy System, Large; and Wind Energy System, Utility

(A) Purpose and Intent: The purpose of this ordinance is to provide regulations for the placement, design, construction, monitoring, operation, modification, and removal of large wind energy systems and utility wind energy systems, while addressing public safety, minimizing impacts on scenic, natural and historic resources of the County and not unreasonably interfering with the development of independent renewable energy sources.

(B) General Standards:

1. Type of Tower: The tower component of any large wind energy system or utility wind energy system shall be one of monopole design that is recommended and certified by the manufacturer.

2. Tower Color: Any large wind energy system or utility wind energy system tower shall maintain a white or galvanized steel finish, unless Federal Aviation Administration (FAA) standards require otherwise. The ~~zoning administrator~~ Board of Supervisors may allow a property owner, who is attempting to conform the tower to the surrounding environment and architecture, to paint the tower to reduce its visual obtrusiveness.

3. Setbacks: Large wind energy systems and utility wind energy systems shall be set back a minimum distance of _____ (50 to 2,500 feet; or 100% to 600% of the structure height) from all adjoining non-participating property lines. The Board of Supervisors may increase the minimum required setbacks as appropriate, based on site specific considerations during the special use permit process.

4. Separation: The minimum distance required between towers shall be established during the special use permit process by the Board of Supervisors.

5. ***Noise:*** ***Large wind energy systems and utility wind energy systems shall not exceed _____ (0 to 180) decibels, as measured at the closest non-participating property line, except during short-term events such as severe windstorms.. An analysis, prepared by an ~~qualified~~ acoustical engineer with a professional engineering license in the Commonwealth of Virginia, shall be provided to demonstrate compliance with this noise standard.***

6. ***Shadowing/Flicker:*** ***Large wind energy systems and utility wind energy systems shall be sited in a manner that minimizes shadowing and flicker impacts. The applicant has the burden of proving that this effect does not have significant adverse impact on neighboring or adjacent uses through the appropriate siting of the facility or mitigation.***

7. ***Lighting:*** ***Large wind energy systems and utility wind energy systems shall not be artificially lighted unless required by the Federal Aviation Administration (FAA) or an appropriate authority.***

8. ***Electromagnetic Communication Interference:*** ***The applicant shall ensure that there will be no disruption or loss of radio, telephone, television or similar signals. If loss or disruption occurs, the applicant shall be required to provide appropriate mitigation measures to ensure that the signal is maintained.***

   (a) Large wind energy systems and utility wind energy systems within two (2) miles from a general or commercial airport or located at a ground elevations at or above two thousand (2,000) feet, average mean sea level, shall be referred to the appropriate regional office of the Federal Aviation Administration (FAA) for review and comment prior to filing an application for a special use permit

   (b) Large wind energy systems and utility wind energy systems shall comply with any additional requirements established in the airport overlay district in Section 30-72 of this ordinance, and the emergency communications overlay district in Section 30-73.

9. ***Advertising:*** ***Signs, writing, pictures, flags, streamers, or other decorative items that may be construed as advertising are prohibited on wind energy systems, except as follows:***

   (a) Manufacturer's or installer's identification on the wind turbine, and

   (b) Appropriate warning signs and placards.

10. ***Speed Controls:*** ***Large wind energy systems and utility wind energy systems shall be equipped with manual (electronic or mechanical) and automatic overspeed controls to limit the blade rotation speed to within the design limits of the wind energy system.***

11. ***Land clearing, soil erosion and habitat impacts:*** ***Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the wind facility. Adherence to Erosion and Sediment Control regulations is required. The restoration of natural vegetation in areas denuded for construction activities shall be required so long as the restored vegetation does not interfere with the operation of the wind energy system or the maintenance thereof.***

12. ***Monitoring and Maintenance****: The applicant shall maintain large wind energy systems and utility wind energy systems in good condition. Such maintenance shall include, but not be limited to, painting, structural integrity of the foundation and support structure and security barrier (if applicable), and maintenance of the buffer areas and landscaping if present. Site access shall be maintained to a level acceptable to the Zoning Administrator. The project owner shall be responsible for the cost of maintaining the large wind energy system and the utility wind energy system and access road, unless accepted as a public way, and the cost of repairing any damage occurring as a result of operation and construction.*

13. ***Removal of Defective or Abandoned Large Wind Energy Systems or Utility Wind Energy Systems*** ~~***: Large wind energy systems and utility wind energy systems shall comply with the following:***~~

(a) At such time that a large or utility wind energy system is scheduled to be abandoned or discontinued, the owner shall notify the Zoning Administrator by certified U.S. mail of the proposed date of abandonment or discontinuation of operations.

(b) Within 365 days of the date of abandonment or discontinuation, the owner shall physically remove the large or utility wind energy system. This period may be extended at the request of the owner and at the discretion of the County. Physically remove shall include but not be limited to:

i. Removal of the wind turbine and tower, all machinery, equipment, equipment shelters, security barriers and all appurtenant structures from the subject property;

ii. Proper disposal of all solid or hazardous materials and wastes from the site in accordance with local and state solid waste disposal regulations;

iii. Restoration of the location of the large or utility wind energy system to its natural preexisting condition, except that any landscaping or grading may remain in the after-condition if a written request is submitted by the landowner to the County.

iv. Foundations shall be removed to a depth of three (3) feet below ground level or covered to an equivalent depth with fill material. At the time of removal, the site shall be restored to its pre-existing condition. If a written request is submitted by the landowner to the County then this requirement may be waived or altered for any other legally authorized use. Restoration shall be verified by the County.

(c) If the large or utility wind energy system, or any part thereof, is inoperable for more than 180 days and the owner fails to give such notice to the County, then the large or utility wind energy conversion system shall be considered abandoned or discontinued. The County shall determine in its decision what proportion of the large or utility wind energy conversion system is inoperable for the wind energy system to be considered abandoned.

(d) Decommissioning

i. If an applicant fails to remove a large or utility wind energy system in accordance with this section of this ordinance, the County shall have the authority to enter the subject property and physically remove the facility. The County shall require the applicant, and/or subsequent owners of the property or large or utility wind energy system, to provide a form of surety mutually agreeable to the applicant and the County to cover costs of the removal in the event the County must remove the facility.

ii. Prior to obtaining a Certificate of Occupancy from the County and on every tenth (10th) anniversary of the commencement of the commercial operation of the Project, applicant shall provide to the County an estimate of the projected salvage value of the turbines and other equipment to be removed from the Project site ("Salvage Value"), as well as the projected cost of removing the turbines and other equipment from the site as determined by an independent engineer mutually agreeable to the applicant and County ("Gross Decommissioning Cost").

iii. Based on this determination, applicant shall post and maintain decommissioning funds in an amount equal to Net Decommissioning Cost, that being Gross Decommissioning Cost minus Salvage value.

iv. Decommissioning Funds may be in the form of a performance bond, surety bond, letter of credit, corporate guarantee or other form of financial assurance as may be mutually acceptable to the applicant and the county.

v. The Decommissioning Funds shall be posted and maintained with a bonding company or Federal or State chartered lending institution mutually agreeable to the applicant and County.

14. Application Requirements

- ***Photo Simulations:***
- ~~***Balloon Testing:***~~
- ***System Height:***
- ***Wetlands:***
- ***Fish, Wildlife and Native Plant Protection:***
- ***Compliance with Other Regulations:***
- ***Independent Consultant Services:***
- ***Proof of Liability Insurance:***

SECTION 30-88. Accessory Uses and Structures

(A) As defined in section 30-28, accessory uses and structures may be commonly found and associated with principal use types. Principal uses which are allowed by right or by special use may include accessory uses and activities, provided such accessory uses and activities are appropriate and incidental to the principal use, and provided they are designed and located in accord with the intent and provisions of this ordinance.

Sec. 30-88-1. Accessory Uses: Agricultural Use Types.

(A) Agricultural use types may include the following accessory uses, activities or structures on the same site or lot:

5. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-2. Accessory Uses: Residential Use Types.

(A) Residential use types may include the following accessory uses, activities or structures on the same site or lot:

8. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-3. Accessory Uses: Civic Use Types.

(A) Civic use types may include the following accessory uses, activities or structures on the same site or lot:

7. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-4. Accessory Uses: Office Use Types.

(A) Office use types may include the following accessory uses, activities or structures on the same site or lot:

7. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-5. Accessory Uses: Commercial Use Types.

(A) Commercial use types may include the following accessory uses, activities or structures on the same site or lot:

6. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.

Sec. 30-88-6. Accessory Uses: Industrial Use Types.

(A) Industrial use types may include the following accessory uses, activities or structures on the same site or lot:

9. Micro wind energy systems that project no more than 15 feet above the highest point on the structure and complies with the height requirement of the zoning district.